**Scientific Investigation: Instant Snow**

Big Idea: How can we design an experiment that is scientifically valid?

**Step 1: Initiating the Experiment**

|  |  |
| --- | --- |
|  | **Terms used in Experiments:**  **Independent Variable**  - the scientist sets this up at the beginning of the experiment  **Dependent Variable**  - measured or observed by the scientist at the end of the experiment  **Controlled Variables**  - all the other variables  **Hypothesis**  - an educated prediction about the outcome of the experiment |

**What did I observe in *the control sample*?**

Draw a well labelled sketch about making the instant snow***control*** *sample*. Use your senses to describe the event before and after mixing. **Record the final volume.**

Before

After

**What am I wondering?**

What are three questions or predictions you have about making instant snow? For example, “Would coloured water make coloured snow?”

**-**

**-**

**-**

**Step 2: What variables could I change or vary about making instant snow?**

|  |  |  |
| --- | --- | --- |
| Variable |  | Variable |
|  |  |  |
| Variable |  | Variable |
|  |  |  |
| Variable |  | Variable |

**Step 3: What variables could I measure or observe about the result of making instant snow?**

|  |  |  |
| --- | --- | --- |
| Measure/Observe |  | Measure/Observe |

**Step 4: What variables will I change and not change compared to the control sample?**

|  |  |  |
| --- | --- | --- |
| Independent Variable is:  (Choose 1 **Variable** you will change from Step 2) | **→** | Dependent Variable is:  (Choose 1 **Measure/Observe** variable  from Step 3) |

What factors will be held constant so it is a fair experiment?

Put the rest of the v**ariables** from Step 2 here. The **controlled variables** will be:

|  |  |  |
| --- | --- | --- |
| Unchanged or Controlled Variable is: |  | Unchanged or Controlled Variable is: |
|  |  |  |
| Unchanged or Controlled Variable is: |  | Unchanged or Controlled Variable is: |
|  |  |  |
| Unchanged or Controlled Variable is: |  | Unchanged or Controlled Variable is: |

**Step 4: What is the question I want to explore about *the control* *sample*?**

When I change \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ what will happen to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?

(independent variable) (dependent variable?)

**Step 5: What is my hypothesis or prediction (what and why)?**



I predict that if the



is (↑ or ↓ or ?)



then the



will (↑ or ↓ or ?)

I think this will happen **because** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .

Step 6: **How do I test my Prediction/Hypothesis?**

|  |  |  |  |
| --- | --- | --- | --- |
| **My Control Set-up:**  Here’s how the *control sample* experiment was performed …  Write a numbered list of experimental instructions describing how you made instant snow the **first time.** |  | | **My Test Set-Up:**  Here’s how I will change the independent variable…  What will I do? How will I change the independent variable? Write your experimental instructions. |
| **My Control Sample Steps:** | | **My Test Steps:** | | |
|  | |  | | |

**Step 7: Perform the Experimental Test Setup and record Observations**

**Step 8: Conclusion**

Write a complete sentence that describes if the prediction was **supported** or **rejected**.